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# THE EFFECT OF USING HISTORICAL DATA IN CATI GRAIN STOCKS ENUMERATION IN THE MARCH 1988 AGRICULTURAL SURVEY

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#### ABSTRACT

The National Agricultural Statistics Service (NASS) collects quarterly data to provide estimates of on-farm grain stocks and storage capacity. A research project, conducted in 14 states (Alabama, Georgia, Indiana, Iowa, Louisiana, Minnesota, Mississippi, Nebraska, Ohio, Pennsylvania, Tennessee, Texas, Virginia and Washington) in March 1988, investigated the effects on the quality of reported corn, soybean, and all wheat on-farm grain stocks and on-farm storage capacity data of using previously collected data in computer assisted telephone interviews. The results showed that the use of historical data from the December 1987 Agricultural Survey as an editing tool resulted in some upward revisions of initial March 1988 and December 1987 responses. These upward revisions reduced the level differences between the survey and Agricultural Statistics Board balance sheet indications, thus reducing a perceived bias in the survey indications. The results of this research indicate that the use of historical data as a CATI editing tool may improve the quality of reported grain stocks data.

#### KEY WORDS

CATI, Editing, Grain Stocks, Reconciliation, Reinterview, List Frame

This paper was prepared for limited distribution to the research community outside the U.S. Department of Agriculture. The views expressed herein are not necessarily those of NASS or USDA.

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## SUMMARY

This report describes an analysis of the effects of using previous data during Computer Assisted Telephone Interviewing (CATI) in the collection of on-farm grain stocks and storage capacity data. The objective for using the historical data in collecting current survey data is to improve the accuracy of on-farm grain stocks and storage capacity estimation, while reducing respondent burden by minimizing callbacks to clarify questionable reports.

This study analyzed the effectiveness of using historical data in real-time editing of Agricultural Survey Program (ASP) grain storage data in 14 states (Alabama, Georgia, Indiana, Iowa, Louisiana, Minnesota, Mississippi, Nebraska, Ohio, Pennsylvania, Tennessee, Texas, Virginia and Washington). Initial March 1988 ASP responses to the on-farm grain stocks and storage capacity questions were subject to an on-line CATI edit which compared them to December 1987 ASP responses to the same inventory questions. When the difference in the responses exceeded edit limits, the respondent was probed for additional information to explain or reconcile the difference. Both the current (March 1988) and previous (December 1987) responses were then subject to revision, and reasons for the differences which triggered the edit flags were solicited. The aggregate levels of the revised responses due to the editing for all stock items tested, except for March 1988 on-farm soybean and all wheat stocks for which few differences were flagged, were significantly higher than the levels of the original responses.

Shortly after collecting the March 1988 ASP data using CATI, a small subset of the respondents in three states were contacted again. Personal face-to-face reinterviews were used to ask the same questions about their on-farm grain stocks and storage capacity, with the same March 1 reference date. The reinterview responses were reconciled with the final CATI responses to determine "true" values. For the three states (Iowa, Nebraska and Pennsylvania) with these reinterview data, the analysis compares the results of using historical data in the editing process to these "true" values. No significant differences were detected. This fact indicates the use of historical on-farm grain stocks and capacity data in an on-line CATI edit may not bias the estimates of these items. In fact, the use of historical data in this manner resulted in responses which tended to be higher than the original responses and closer to the reconciled "truth".

## INTRODUCTION

This report describes an analysis of the effects of using historical data in Computer Assisted Telephone Interviewing (CATI) for the December 1987 and March 1988 Agricultural Survey Program (ASP) grain stocks data. States included in the analysis were Alabama, Georgia, Indiana, Iowa, Louisiana, Nebraska, Minnesota, Mississippi, Ohio, Pennsylvania, Tennessee, Texas, Virginia and Washington. Variables analyzed were on-farm corn, soybean and all wheat stocks and on-farm grain storage capacity. This was a two part study. The first part of the analysis involving all 14 states investigated the direct effect on survey indications of using historical data as an editing tool. The second part compared the results of the use of historical data in editing versus "true" values collected from a March 1988 Reinterview Survey in three of the states.

A split sample comparison of the effects of using historical data in editing was performed. One sample group (operational) was interviewed without any use of historical data, while a subgroup of the other sample group (test) was exposed to the use of historical data as an editing tool.

As March 1988 ASP grain stock data were collected in the test group, they were compared in real-time to previously reported December 1987 data as part of the CATI process. When a March response differed from the corresponding December response by more than a predetermined percentage, the respondent was asked to explain the change. This resulted in revisions of March and/or December responses. The first part of the analysis in this report is designed to determine if the revised responses are significantly different from the original responses. That is, if the differences [March 1988 original - March 1988 revised] and [December 1987 original - December 1987 revised] are significantly different from zero. Also of interest was the direction of any differences due to the editing with historical data.

The March 1988 CATI sample included approximately 60% of list units new to the sample in March and approximately 40% that had been in at least one quarter. Therefore, the use of historical data as an editing tool could be applied to at most 40% of the CATI sample. Respondents were asked to verify absolute differences between the March and December responses of at least 10% for stocks greater than or equal to 10,000 bushels and at least 50% for stocks under 10,000 bushels. They were also asked to verify absolute differences between the March and December responses of at least 5% for storage capacity greater than or equal to 10,000 bushels and at least 25% for storage capacity under 10,000 bushels.

A subgroup of March 1988 respondents in three states (IA,NE,PA) were reinterviewed shortly after the survey. Differences between the final survey responses and the reinterview responses were reconciled to obtain the best possible proxies to truth. The latter portion of the analysis in this report compares the results of the historical data editing with the "true" values obtained from the reinterview and reconciliation process in these three states.

## BACKGROUND

Investigating objective and statistically defensible uses of historical data in survey data collection is of considerable interest to NASS. With the sample designs used for NASS surveys, many of the same sample units are contacted multiple times during the survey year. If previously reported data can be used in a subsequent survey in a non-biasing manner, these data can perhaps be exploited to improve survey results. This report documents the results of research on the use of historic grain stocks data for editing in a CATI interview. The research was initiated to investigate the use of historical data in improving the quality of the survey data collected, while reducing respondent burden.

The potential for improvement in survey data quality lies in the fact that indicated survey increases or decreases in stocks and/or capacity between quarters are often not indicative of real change. Differences can be due to a definitional problem, such as a respondent's failure to include all stocks on the total acres operated and exclude stocks stored elsewhere, or simply to a change in respondent between quarters. These situations, when they can be identified, often prompt a return call to the respondent to clarify unexpected responses. An on-line CATI edit allows responses outside an expected range to be reconciled during the initial interview. Respondent burden is reduced by contacting the respondent just once during the survey, and the efforts of the office staff can then be directed to areas other than callbacks.

The 1988 March Agricultural Survey (MAS) was selected for this research since declines in on-farm grain stocks are normal between December and March. The expected changes in the stocks stored during this period would cause the comparison between the current and historical responses to frequently fall outside of the edit range, triggering the additional question(s) to be asked. Historical data were provided after an edit check in order to avoid biases from enumerators influencing respondents with prior responses.

The use of historical data in an interview situation has not been extensively explored. O'Muircheartaigh (1986) provided initial interview information on paper to enumerators conducting reinterviews. He found that instructions for enumerators not to utilize the historical data prior to the completion of the reinterview were not followed. Bailar (1968) also studied the use of historical data and the reinterview process. She states that the best procedures for evaluating the quality of a survey include a reinterview relatively close in time to the original interview, with reinterviewers not having access to the original responses until the reinterview is completed.

Within NASS, the results of the direct use of historical data in an interview (Pafford 1986, 1988) and the use of historical data in the margins of the CATI screen (Pafford 1986) showed that these methods have the potential to bias the respondent's answers. Steiner (1980) looked at differences between samples of telephone respondents and respondents interviewed face-to-face when historical pig farrowing information was provided by the enumerator. Results indicated some effect on telephone respondents, but no effect on those interviewed face-to-face. House (1984) stated that improvements in data quality can be gained by CATI on-line edit checks for data consistency within an interview, or when responses are compared to previously reported control data.

### **INSTRUMENT DESIGN**

One CATI instrument was developed with separate sections to handle the operational and treatment designs for the fourteen CATI states in the research project. An example of each of the CATI operational and treatment grain stocks sections is presented in Appendix A.

In the operational design, respondents were asked about storage on their operation of the grains of interest to the state (in Indiana, for example, corn, soybeans, and wheat), and about the total storage capacity of the operation.

While the treatment design asked these same questions, it differed from the operational design in the addition of several questions which appeared to the enumerator when on-line edit checks failed. The edit checks compared the current (March 1, 1988) reported grain stocks data to the historical (December 1, 1987) grain stocks data for the operation. Potential errors were flagged when all of the following conditions were met:

- 1) The respondent was in the December survey;
- 2) Neither the December or March stocks were missing;

- 3) There was a large increase or decrease in the reported commodity specific stocks or capacity between December and March. Large increases or decreases were defined as:
- a) differences of more than 10% of December reported stocks for stocks of 10,000 or more bushels;
  - b) differences of more than 50% of December reported stocks for stocks under 10,000 bushels;
  - c) differences of more than 5% of December reported capacity for storage capacity of 10,000 or more bushels;
  - d) differences of more than 25% of December reported capacity for storage capacity under 10,000 bushels.

CATI probing occurred immediately after the completion of the grain stocks section. This ordering of questions enabled us to explore the possibility of improving current grain stocks responses using historical data without biasing initial survey responses by "feeding" respondents previous responses.

#### THE SAMPLE

A split sample design was utilized to evaluate the use of a prior quarter's grain stocks data as an edit check during a grain stocks survey. One group (**operational**) consisted of sample units new to the survey. The other group (**test**) consisted of sample units which had been included in the prior quarter's survey. The operational or control group had no access to historical data. The test group sample units were provided the historical data when edit checks exceeded the CATI edit limits. A layout of the sample design used in each state is presented below:

CONTROL	TEST			
	ORIGINAL		REVISED	
March 1988	March 1988	Dec. 1987	March 1988	Dec. 1987

Responses to wheat, corn and soybean on-farm grain storage and total storage capacity were obtained in March 1988 and compared to responses obtained in December 1987. Revised responses were obtained for the test group units whose data comparison fell outside of specified edit limits. The revised March 1988 and December 1987 responses were compared to corresponding original responses to evaluate the significance of differences.

The study utilized only the list portion of the ASP sample. Sample units were randomly selected within strata designated for CATI enumeration.

## RESULTS

Since prior research has shown different levels of estimates due to the number of times sample units have previously been contacted in the survey program, analysis was performed to determine if there was a rotation group effect. This is not the primary purpose of this study; however, since all operational group samples were new samples and all test group samples were "old" samples, differences detected during analysis of the test group data may be confounded with a rotation group effect. Table 1 lists approximate 95% confidence intervals of mean March 1988 grain stocks (corn, soybeans and all wheat) and storage capacity responses by group (operational and test). Since the intervals do not overlap, we can conclude that there is a rotation group effect, and that "new" samples tended to result in lower reports than those that had been contacted at least one previous quarter. This result somewhat limits the scope of inference of other analyses using sample units in the test group. That is, any differences detected may be confounded with the number of times sample units have been previously contacted in the survey program.

**Table 1. Historical Data Analysis (March 1988 Responses):  
A comparison of operational and test group mean responses  
95% confidence intervals (units are bushels).**

Storage Item	Record Counts		Operational Interval		Test Interval	
			Lower Limit	Upper Limit	Lower Limit	Upper Limit
	Oper.	Test				
Corn	7,623	4,549	3,170	3,650	3,850	4,510
Soybeans	7,683	4,577	320	380	380	490
All Wheat	7,716	4,590	60	100	100	230
Capacity	7,527	4,489	8,850	9,350	9,600	10,310

The purpose of the next part of this analysis was to determine if the edited responses were significantly different from the original responses. Of the March 1988 responses which were changed due to the edit, the majority of the differences between the original and the revised responses for corn and capacity were negative. This indicates UPWARD revisions of these March 1988 responses. Sign tests on these differences were performed to determine if the number of upward revisions were significantly different from the number of downward revisions. Significant differences were detected for corn stocks and capacity. The number of revisions to the March 1988 on-farm soybean and all wheat storage responses were very small and did not provide much power to detect any differences. Of the December 1987 responses which were changed due to the edit, the majority of the differences between the original and the revised responses were also negative, indicating UPWARD revisions. Sign tests on these differences showed that the number of upward revisions to the December 1987 responses was significantly greater than the number of downward revisions for all four analysis variables.

In this analysis the sign tests provide an overall indication of the direction of the revisions. However, they do not provide a precise nor statistically sound measure of the magnitude of the differences. Design based means and standard errors of the differences were computed to provide statistical measures of the differences and to evaluate their significance.

Table 2 lists by storage item the number of usable records in the test domain which triggered an edit check, mean differences between original March 1988 and edited March 1988 responses, and 95% confidence intervals for the differences. Since zero is not covered by the confidence intervals for on-farm corn stocks and storage capacity, we can conclude that the mean difference between original and edited responses is not zero for these analysis variables. No significant differences were detected for on-farm soybean or all wheat stocks, but too few of these variables were revised to have sufficient power to detect any differences. Results indicate the use of historical data as an editing tool resulted in an upward revision of original March 1988 on-farm corn stocks and grain storage capacity responses.

**Table 2. Historical Data Analysis: (March Original - March Edited)  
95% Confidence Interval for Difference and Sign Test p-values.**

Storage Item	Record Counts	Mean	Lower Limit	Upper Limit	Sign Test p-value
Corn	1,289	-150	-300	0	0.01
Soybeans	528	15	-20	50	0.11
All Wheat	242	-15	-50	20	0.18
Capacity	1,632	-475	-690	-260	< 0.01

Table 3 lists by storage item the number of usable records in the test domain which triggered an edit check, mean differences between original and edited December 1987 responses, and 95% confidence intervals for the differences. Since the confidence intervals do not contain zero we can conclude that the mean difference between original and edited December 1987 responses is not equal to zero. These December results, like some of the March results, indicate the use of historical data as an editing tool resulted in an upward revision of original responses.

**Table 3. Historical Data Analysis: (December (Original - Edited))  
95% Confidence Interval for Difference and Sign Test p-values.**

Storage Item	Record Counts	Mean	Lower Limit	Upper Limit	Sign Test p-value
Corn	1,289	-570	-870	-270	< 0.01
Soybeans	528	-165	-320	-10	< 0.01
All Wheat	242	-85	-135	-35	< 0.01
Capacity	1,632	-460	-810	-110	< 0.01

Table 4 lists reasons for the differences between original March 1988 and December 1987 responses and the percent of responses of each reason by grain storage summary item. Most of the differences were due to: 1) stocks being bought or sold, 2) stocks being estimated or incorrect, 3) stocks being fed to livestock or 4) storing another person's grain.

**Table 4. Historical Data Analysis: Reasons For Differences Between Original March Responses and Original December Responses.**

Reason	Percentages			
	Corn	Soybeans	Wheat	Capacity
Bought/Sold	33	59	38	14
Dec/Mar stocks were estimated or incorrect	18	15	16	52
Fed livestock or storing other's grain	27	3	10	2
Failed to include reserved/sealed grain	2	1	2	0
Failed to include all stocks (facilities) on land	3	1	2	10
Crop stored off farm	2	3	2	0
Unable to resolve reason	7	10	16	9
Other	8	8	14	13

The purpose of the remainder of the analysis was to compare the results of the use of historical data in editing to "true" values collected from a March 1988 Reinterview Survey conducted in three of the test states (IA, NE and PA). The reinterview sample which was drawn randomly from all March 1988 list samples completed on CATI, spanned the operational and test domains of this research. For our purposes here the respondents subject to the use of historical data were restricted to the test domain, so that only reinterview samples falling in this domain could be used in the comparisons. Therefore, results presented below should not be compared to or confused with results presented in the report by McClung and others which benefited from the full reinterview sample sizes.

Table 5 summarizes comparisons of March 1988 final responses to the proxies to the truth. Listed by storage item are the number of records which both triggered an edit verification and had a reconciled "true" value, the mean differences between the March 1988 final responses and the "true" value, and 95% confidence intervals for the differences. Since zero fell within the confidence intervals of the mean differences for on-farm soybean and all wheat storage and on-farm grain storage capacity, we can conclude that the mean difference is not significantly different from zero for these analysis variables. However, the mean difference is significantly different from zero for on-farm corn stocks. Sign tests on the differences were performed to determine if the number of positive differences was greater than the number of negative differences. A significant number of the proxies were at higher levels than the corresponding final responses for on-farm corn and soybean stocks. However, the historical data editing did tend to bring final responses closer to the "true" values.

**Table 5. Historical Data Analysis: Mean Differences Between the Proxy to the Truth and the Final Response of March 1988 Respondents Subject to the Historical Data Edit, 95% Confidence Intervals for the Differences and One Tail Sign Test p-values.**

Storage Item	Record Counts	Mean	Lower Limit	Upper Limit	Sign Test p-value
Corn	172	1020	0	2,040	0.02
Soybeans	173	180	-70	430	0.01
All Wheat	173	20	-25	75	0.50
Capacity	169	105	-1,455	1,665	0.20

The analyses indicate the use of historical data as an editing tool results in responses which tend to be higher than the original responses but less than the "truth".

## DISCUSSION & RECOMMENDATIONS

The use of prior stocks data as an editing tool has been frequently proposed within NASS. For instance, as this project was being developed the Nebraska State Statistical Office (SSO) suggested that previous quarter's stocks data be made available to their enumerators. This suggestion stemmed from their experience on the 1987 March Agricultural Survey, where overnight computer edits identified numerous cases of stocks increases from the 1986 December Agricultural Survey. When called back to clarify the situation, respondents invariably corrected their responses. The Nebraska staff felt that having the respondent's previous quarter data available in the current survey would eliminate callbacks to many operations.

Reaction to the project was favorable in the Indiana SSO. After reconciling potential errors in the grain stocks section, enumerators often joked with the respondents that they would not be checking up on any more of the respondent's replies. This grew from one enumerator's experience that it seemed to keep the respondent at ease throughout the interview. Also, statisticians in the SSO felt that the good comments the enumerators attached to unusual but accurate situations in the grains stocks section saved two full days of callbacks. They appreciated the immediate correction of detected errors, improving the quality of the data collected.

Comments from the Texas SSO were somewhat less favorable. They indicated that, while the use of historical data seemed to help in some cases, there was significant concern among respondents that we had access to their historical data. Some respondents indicated that they had been persuaded to respond in earlier surveys by being told that all questionnaires were shredded soon after the survey.

Based on the results of these analyses it appears that the operational use of historical data in the context of CATI editing as described in this report is probably appropriate and may well improve the quality of reported grain storage data. The analyses indicated that this use of historical data (quite possibly our most statistically defensible use of these data) may help to reduce an indicated downward bias in our grain storage reporting.

One factor to consider in implementing the approach operationally is to determine an appropriate editing or tolerance level for further probing for each item. For a particular survey this level can best be determined by reviewing past survey data for the levels of change that do routinely exist from quarter to quarter.

Some other general considerations in the Agency's use of historical data are the following:

\* Avoid any use of historical data in which the respondent is "fed" a previous response prior to providing a current survey response. Previous survey research has indicated that this approach to using historical data biases reported data.

\* Limit the use of historical data edit checks in a CATI interview. Concentrating on grain stocks, or hog farrowings, or cropland acreages would be preferable to an entire interview with current levels checked against historical data. The "entire" approach would be tedious and lead to comments of "If you already know all of this, why are you asking me?", or "Just put the same as last time."

\* Ask permission of the respondent in the base period for the enumerator to be allowed to repeat back to the respondent (or others as they may designate) specific pieces of information in subsequent interviews. Statisticians would know in advance when an historical data edit check would be used, and we should let the respondent in on this, enlisting their cooperation in producing the highest quality estimates possible.

By limiting our requests to certain bits of information in a well defined time span, we should be able to minimize respondent hesitation to this concept. And by relating back base period data only to the same respondent (or others as they may designate), our pledge of confidentiality can be maintained.

\* Be sure to add an enumerator comment to the interview after the section in which an historical data check is made, indicating that no more checks of this type will occur in the interview. This would still allow for other edit checks comparing responses given within the current interview.

Current plans are for the Nonsampling Errors Section to investigate the effect of historical data editing on acreage indications. This investigation will probably be tied to the 1992 September Agricultural Survey with June 1992 survey data used for historical data edits in several states.

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## APPENDIX A. Computer Assisted Telephone Interviewing (CATI) Screens

### Part I. Operational Grain Stocks Section for Indiana 1988 March Agricultural Survey

Next, we would like to talk about grains and oilseeds being stored on the [current interview reported] acres operated by [operation name], whether for feed, seed or sale. They can belong to you or someone else or be under government loan, farmer owned reserve or CCC program.

On March 1st, did you have any of the following grains or oilseeds in storage?

<CORN  
<SOYBEANS  
<WHEAT

<1> YES [continues]  
<3> NO [advances to TOTAL STORAGE CAPACITY question]  
<k> DON'T KNOW [advances to next section]  
<r> REFUSED GRAIN STOCKS SECTION [advances to next section]

How much WHOLE GRAIN CORN from 1987 and earlier crop years was in storage on March 1st on this operation?

<0> NONE [advances to next grain type]  
<1-9999999> Bushels, Tons, Lbs, Cwt  
[advances to next grain type]  
<\*> CROP IN STORAGE BUT AMOUNT UNKNOWN  
[continues]

Could you give me your best estimate??

<0> NONE [continues]  
<1-9999999> Bushels, Tons, Lbs, Cwt  
[continues]  
<\*> NO IDEA [continues]

How much SOYBEANS from 1987 and earlier crop years was in storage on March 1st??

<0>	NONE [advances to next grain type]
<1-9999999>	Bushels, Tons, Lbs, Cwt [advances to next grain type]
<*>	NOT KNOWN [continues]

Could you give me your best estimate??

<0>	NONE [continues]
<1-9999999>	Bushels, Tons, Lbs, Cwt [continues]
<*>	NO IDEA [continues]

How much WINTER WHEAT was in storage on March 1st on this operation?? Include 1987 and earlier crop years.

<0>	NONE [advances to TOTAL STORAGE CAPACITY]
<1-9999999>	Bushels, Tons, Lbs, Cwt [advances to TOTAL STORAGE CAPACITY]
<*>	NOT KNOWN [continues]

Could you give me your best estimate??

<0>	NONE [continues]
<1-9999999>	Bushels, Tons, Lbs, Cwt [continues]
<*>	NO IDEA [continues]

What was the TOTAL STORAGE CAPACITY of all bins, cribs, sheds and other structures normally used to store whole grains and oilseeds on those [current interview reported] acres??

<0-9999999> Bushels, Tons, Lbs, Cwt  
[advances to next section]  
<k> NO ANSWER [advances to next section]

[Edit Check: when reported stocks are greater than reported capacity, the following message is displayed.]

SUM OF GRAIN STORED ITEMS IS GREATER THAN GRAIN STORAGE CAPACITY.

GRAIN STORAGE CAPACITY [current bushel equiv.] [current cap. ]  
SUM OF GRAIN STORED [current bushel equiv.] [current total]

JUMPBACk TO CORRECT

CORN.....[current interview reported] Bushels  
SOYBEANS.....[current interview reported] Bushels  
ALL WHEAT.....[current interview reported] Bushels  
CAPACITY.....[current interview reported] Bushels

PUSH <1> if ANSWER is CORRECT  
[advances to next section]

## APPENDIX A. Computer Assisted Telephone Interviewing (CATI) Screens

### Part II. Treatment Corn Stocks Section for Indiana

Next, we would like to talk about grains and oilseeds being stored on the [current interview reported] acres operated by [operation name], whether for feed, seed or sale. They can belong to you or someone else or be under government loan, farmer owned reserve or CCC program.

On March 1st, did you have any of the following grains or oilseeds in storage?

<CORN  
<SOYBEANS  
<WHEAT

<1> YES [continues]  
<3> NO [advances to TOTAL STORAGE CAPACITY question]  
<k> DON'T KNOW [advances to next section]  
<r> REFUSED GRAIN STOCKS SECTION [advances to next section]

How much WHOLE GRAIN CORN from 1987 and earlier crop years was in storage on March 1st on this operation?

<0> NONE [compares current response to stored  
December 1 response]  
<1-9999999> Bushels, Tons, Lbs, Cwt [compares current  
response to December 1 response]  
<\*> CROP IN STORAGE BUT AMOUNT UNKNOWN  
[continues]

Could you give me your best estimate??

<0> NONE [compares current response  
to December 1 response]  
<1-9999999> Bushels, Tons, Lbs, Cwt [compares  
current response to December 1 response]  
<\*> NO IDEA [advances to next grain type]

[The program continues on through the other grains of interest to the state (in Indiana, for example, soybeans and wheat) and through the Total Storage Capacity question. Then, for each grain stored which had a <0> or <1-9999999>, the current:historic edit check is invoked. For each grain in which the proper conditions are met, the following statement is displayed (continuing the example with CORN):]

Our records show that your operation reported [December interview reported] Bushels of CORN being stored as of December 1. We now have [current interview reported] Bushels!

Can you describe the reason for this increase/decrease [case specific]?

- <1> Bought/sold [case specific] CORN [advances to next grain type]
- <2> December/March stocks were estimated/incorrect [continues]
- <3> Storing someone else's corn/fed to livestock [case specific] [continues]
- <4> December/Current [case specific] failed to include RESERVE/SEALED Corn [continues]
- <5> Failed to include ALL stocks on land operated [continues]
- <6> CORN stored in OFF FARM FACILITY; i.e. local elevator, etc. [continues]
- <7> Unable to resolve reason for difference [go to XXa]
- <8> OTHER, specify [continues]

Could you provide the CORRECT data for CORN stored on this operation?

\*\*\*\*\*  
CURRENT STOCKS REPORTED = [current interview reported] Bushels  
DECEMBER REPORTED STOCKS = [Dec. interview reported] Bushels  
\*\*\*\*\*

- <1> to correct Current stocks [continues]
- <2> to correct December stocks [continues]
- <3> to correct BOTH [continues]
- <9> ALL ENTRIES CORRECT [advances to next grain type]

[IF <1> OR <3>:]

What is the correct amount of CORN in storage March 1st?

\*\*\*\*Reported March 1 = [current interview reported] Bu.\*\*\*\*

<0-9999999>      BUSHEL, TONS, LBS, CWT  
                 <k>                UNKNOWN

[IF <2> OR <3>:]

What was the correct amount of CORN in storage December 1, 1987?

\*\*\*\*Reported December 1 = [Dec. interview reported] Bu.\*\*\*\*

<0-9999999>      BUSHEL, TONS, LBS, CWT  
                 <k>                UNKNOWN

XXa

\*\*\*\*\*  
DECEMBER RESPONDENT WAS [December interview reported]  
\*\*\*\*\*

I show that someone other than yourself responded on December  
[December interview date].

Could this have contributed to the difference?

<1>    YES (specify)  
<3>    NO  
<k>    UNKNOWN

[As dictated by the on-line edit, the screen advances to inquire further about the next grain type or Total Storage Capacity, or on to the next section.]

## APPENDIX A. Computer Assisted Telephone Interviewing (CATI) Screens

### Part III. Treatment Storage Capacity Section for Indiana

What was the TOTAL STORAGE CAPACITY of all bins, cribs, sheds and other structures normally used to store whole grains and oilseeds on those [current interview reported] acres??

<0-9999999> Bushels, Tons, Lbs, Cwt [advances to next section]  
<k> NO ANSWER [advances to next section]

[If the <0-9999999> response does not trigger an edit check, the screen advances to the next section. If any conditions which trigger an edit check are met, the following statement is displayed:]

Our records show that your operation reported [December interview reported] Bushels of STORAGE CAPACITY as of December 1. We now have [current interview reported] Bushels!

Can you describe the reason for this increase/decrease [case specific]?

- <1> Added/deleted [case specific] FACILITIES [advances to next section]
- <2> December/March CAPACITY was estimated/incorrect [continues]
- <3> Rented additional facility/facility destroyed [case specific] [advances to next section]
- <4> Failed to include ALL FACILITIES on land operated [continues]
- <5> Unable to resolve reason for difference [go to XXb]
- <6> Other (specify) [continues]

Could you provide the CORRECT data for STORAGE CAPACITY on this operation?

\*\*\*\*\*  
CURRENT CAPACITY REPORTED= [current interview reported] Bushels  
DECEMBER CAPACITY REPORTED = [Dec. interview reported] Bushels  
\*\*\*\*\*

- <1> to correct Current Stocks [continues]
- <2> to correct December Stocks [continues]
- <3> to correct BOTH [continues]
- <9> ALL ENTRIES CORRECT [advances to next section]

[IF <1> OR <3>:]

What is the correct amount of CAPACITY on March 1st?

\*\*\*\*Reported March 1 = [current interview reported] Bushels\*\*\*\*

<0-99999999>      BUSHELs, TONS, LBS, CWT  
                 <k>              UNKNOWN

[IF <2> OR <3>:]

What was the correct amount of STORAGE CAPACITY on December 1st, 1987?

\*\*\*\*Reported Dec. 1 = [December interview reported] Bushels\*\*\*\*

<0-99999999>      BUSHELs, TONS, LBS, CWT  
                 <k>              UNKNOWN

xxb

I show that [December interview reported] responded on December [December interview date].

Could this have contributed to the difference?

<1>    YES (specify)  
<3>    NO  
<k>    UNKNOWN

[The screen advances to next section, unless reported stocks are greater than reported capacity. Then the following question is displayed:]

The FINAL reported grains in storage are greater than the  
CAPACITY!!

Let's review what I have recorded:

STORAGE CAPACITY.....	<u>[current interview reported]</u>	Bushels
TOTAL STOCKS.....	<u>[current interview reported]</u>	Bushel Equiv.
CORN STOCKS.....	<u>[current interview reported]</u>	Bushels
SOYBEAN STOCKS.....	<u>[current interview reported]</u>	Bushels
WHEAT STOCKS.....	<u>[current interview reported]</u>	Bushels

ENTER <1> THEN please enter the correct STOCKS and CAPACITY in  
notes ==>

[The screen advances to the next section.]





